

(19) World Intellectual Property
Organization
International Bureau



538 243

(43) International Publication Date
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number
WO 2004/055000 A1

(51) International Patent Classification⁷: C07D 335/16,
333/76, 339/08, 327/08

(21) International Application Number:
PCT/US2003/039098

(22) International Filing Date:
10 December 2003 (10.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0229081.5 12 December 2002 (12.12.2002) GB

(71) Applicant (for all designated States except US): SUN CHEMICAL CORPORATION [US/US]; 222 Bridge Plaza South, Fort Lee, NJ 07024 (US).

(71) Applicants and

(72) Inventors: HERLIHY, Shaun, Lawrence [GB/GB]; 6 Fagus Close, Walderslade, Chatham, Kent ME5 9DD (GB). ROWATT, Brian [GB/GB]; 16 Keswick Drive, Maidstone, Kent ME16 0DQ (GB). DAVIDSON, Robert, Stephen [GB/GB]; Trafford Lodge, 496 Uppingham Road, Leicestershire LE5 2GG (GB).

(74) Agent: PERSLEY, Sidney; 222 Bridge Plaza South, Fort Lee, NJ 07024 (US).

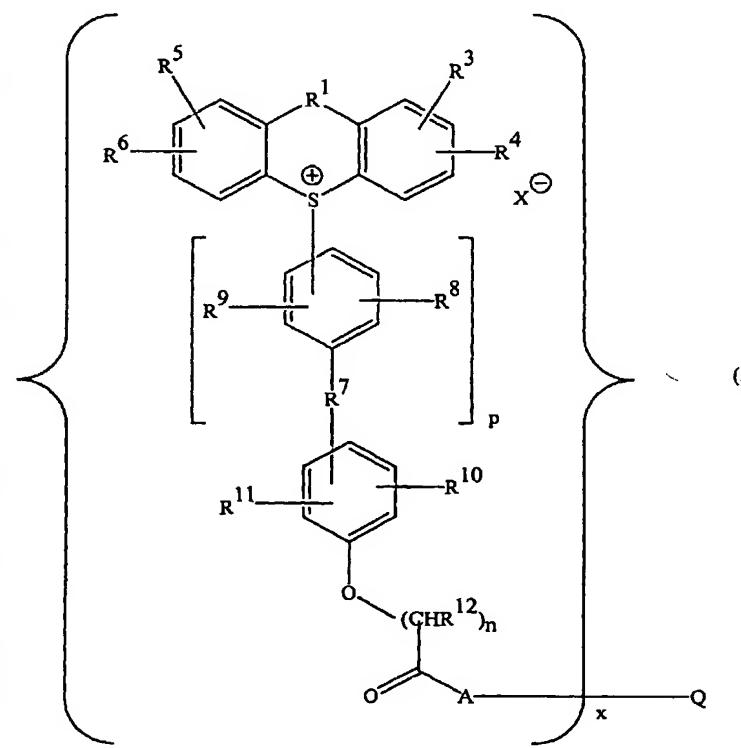
(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: MULTIFUNCTIONAL CATIONIC PHOTINITIATORS, THEIR PREPARATION AND USE

WO 2004/055000 A1



by polymerisation initiated by radiation.

(57) Abstract: Compounds of formula (I): [where: R¹ is a direct bond, oxygen, a group >CH₂, sulphur, a group >C=O, a group-(CH₂)₂ or a group-N-R^a, where R^a is hydrogen or alkyl; R³, R⁴, R⁵ and R⁶ are hydrogen or substituentsα; R⁸, R⁹, R¹⁰ and R¹¹ are hydrogen, hydroxy or alkyl; or R⁹ and R¹¹ are joined to form a fused ring system with the benzene rings to which they are attached; R⁷ is a direct bond, oxygen or a -CH₂-group; p is 0 or 1; substituentsα are: alkyl, alkoxy, alkenyl, halogen, nitrile, hydroxyl, aryl, aralkyl, aryloxy, aralkyloxy, arylalkenyl, cycloalkyl, carboxy, carboxyalkoxy, alkoxy carbonyl, aryloxycarbonyl, alkylcarbonyloxy, alkanesulphonyl, arenesulphonyl, alkanoyl or arylcarbonyl; n is 1 to 12; R¹² is hydrogen, methyl or ethyl; A is a group -[O(CH^R¹³CHR¹⁴)_a]_y-, -[O(CH₂)_bCO]_y-, or -[O(CH₂)_bCO]_(y-1)-[O(CH^R¹³CHR¹⁴)_a]-, where: one of R¹³ and R¹⁴ is hydrogen and the other is hydrogen, methyl or ethyl; a is 1 to 2; b is 4 to 5; Q is a residue of a polyhydroxy compound having from 2 to 6 hydroxy groups; x is a number greater than 1 but no greater than the number of available hydroxyl groups in Q; y is a number from 1 to 10; and X⁻ is an anion]; and esters thereof are useful as cationic photoinitiators, especially for use in surface coating applications, such as printing inks and varnishes, and which are intended to be cured



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.